ENTRANCE TEST (2024)
MDCAT FLP # 7
BIOLOGY

Q.1 _______ is must for an organism to survive:
A) Reproduction
B) Locomotion
C) Coordination
D) Digestion

Q.2 Width of a fallopian tube is comparable with a:
A) Sewing needle
B) Human finger
C) Golf stick
D) Spoke of bicycle

Q.3 The most advanced coelomates belong to:
A) Echinoderms
B) Hemichordates
C) Chordates
D) Arthropods

Q.4 _________ is the most important factor in peptic ulcer disease, accounts for 90% of duodenal ulcer and 70% of the gastric ulcer:
A) *Helicobacter pylori*
B) Persistent use of spicy food
C) Persistent use of fatty food
D) *Escherichia coli*

Q.5 Malonic acid competes for:
A) Succinic acid
B) Active site
C) Enzyme
D) Fumaric acid

Q.6 There are no blood vessels and lymphatics inside it:
A) Muscle
B) Bone
C) Cartilage
D) Cranium

Q.7 The process of the production of the largest cell in human body is called:
A) Gametogenesis
B) Oogenesis
C) Spermatogenesis
D) Microgenesis

Q.8 Root nodule bacteria are found in:
A) Orchid plants
B) Papilionaceous plants
C) Leguminous plants
D) Rosaceous plants

Q.9 According to Lynn Margulis mitochondria were evolved from:
A) Advanced organelles
B) Primative organelles
C) Advanced cells
D) Primitive cells

Q.10 Following are the features of cartilage, EXCEPT:
A) It is soft and flexible
B) It is made up of chondrocytes
C) Bone marrow is absent
D) Matrix possesses calcium salts

Q.11 Map units were introduced by:
A) W.S. Sutton
B) T.H. Morgan
C) John Mendel
D) Archibald Garrod

Q.12 _______ and ________ are used to regenerate 3RuBPs:
A) 3PGAL, 1ATP
B) 3PGAL, 3APT
C) 5PGAL + 1ATP
D) 5PGAL + 3ATP

Q.13 Voluntary muscles are controlled by the motor neurons of:
A) Parasympathetic nervous system
B) Sympathetic nervous system
C) Somatic nervous system
D) Autonomic nervous system

Q.14 Saddle joint is located between:
A) Atlas and axis
B) Skull and its vertebrae
C) Hip bones and thigh bone
D) Carpometacarpal bones of thumbs

Q.15 The ruptured follicle turns yellow, under the influence of:
A) LH
B) FSH
C) LTH
D) ICSH

Q.16 Coelom is subdivided into three cavities in:
A) Arthropods
B) Annelids
C) Nematodes
D) Echinoderms

Q.17 An area of our body having 10 cold receptor will carry how many pain receptors?
A) 270
B) 250
C) 210
D) 200

2024

Q.18 Earth is 3.5 billion years old according to:
A) Darwin's theory
B) Lamarck's theory
C) Big bang theory
D) Endosymbiont theory

Q.19 Cristae are ______ of ______ mitochondrial membrane:
A) Infolds, inner
B) Outfolds, inner
C) Infolds, outer
D) Outfolds, outer

Q.20 The respiratory tract terminates into:
A) Air sacs
B) Blood capillaries
C) Alveoli
D) Bronchioles

Q.21 Following are disaccharides, EXCEPT:
A) Maltose
B) Lactose
C) Sucrose
D) Fructose

Q.22 ABO blood group is found in:
A) Apes
B) Chimpanzees
C) Gorillas
D) Primates

Q.23 Average number of ______ in human is 250,000 per mm^3:
A) Monocytes
B) Lymphocytes
C) Platelets
D) Basophil

Q.24 Casparian strips interrupt the:
A) Apoplast
B) Symplast
C) Vacuolar pathway
D) Plasmodesmata

Q.25 Lateral appendages are absent in:
A) Lumbricus
B) Neries
C) Hirudo
D) Pheretima

Q.26 X-linked dominant traits have ________ % less probability in males:
A) 50%
B) 25%
C) 17%
D) 15%

Q.27 Mention the number of steps of glycolysis which involve phosphorylation:
A) 1, 3
B) 6, 7
C) 7, 10
D) 3, 7

Q.28 Most diverse types of chlorophyll are found in:
A) Bryophytes
B) Pteridophytes
C) Algae
D) Bacteria

Q.29 Light harvesting system of plants consists of:
A) Two photosystems
B) Three photosystems
C) Two pigment molecules
D) Three pigment molecules

Q.30 The heat capacity of water is:
A) 1.18 joules/gm
B) 2.18 joules/gm
C) 3.18 joules/gm
D) 4.18 joules/gm

Q.31 Earthquake detection is enabled by receptors located in:
A) Rods
B) Cones
C) Ears
D) Joints

Q.32 Following are aerobic processes, EXCEPT:
A) Photorespiration
B) Internal respiration
C) External respiration
D) Electron transport chain

Q.33 Photosystem II have no involvement in:
A) Non-cyclic phosphorylation
B) Cyclic phosphorylation
C) Light absorption
D) ATP production

Q.34 When Morgan crossed two red eyed monohybrid flies, he got red eyed flies with following percentage:
A) 25%
B) 50%
C) 75%
D) 100%

Q.35 The male reproductive system consists of two testes that produce sperms, ducts that carry sperms and:
A) A single gland
B) A single tube
C) Various glands
D) Various tubes

Q.36 Primitive mammals belong to:
A) Mesotheria
B) Eutheria
C) Metatheria
D) Prototheria

Q.37 Immune system treats the immunogen as:
A) Nutrients
B) Antibody
C) Intruders
D) Guards

Q.38 A female for x-linked recessive trait can be affected if she carries allele on its:
A) X-chromosome
B) Y-chromosome
C) X-Y chromosomes
D) Both X-chromosomes

Q.39 Following are the stimuli for secretion of oxytocin, EXCEPT:
A) Increased progesterone
B) Suckling
C) Decreased progesterone
D) Distension in uterus

Q.40 The invertebrates have been divided into:
A) Six major phyla
B) Seven major phyla
C) Eight major phyla
D) Nine major phyla

Q.41 Over-secretion of which hormone becomes the cause of weakness of bones:
A) STH
B) TSH
C) PTH
D) ICSH

Q.42 Appearance of four phenotypes as a result of dihybrid test cross indicates the following, EXCEPT:
A) Genes are completely linked
B) Genes are incompletely linked
C) Genes are located on separate chromosomes
D) Genes are located on same chromosome

Q.43 Bile production is the function of:
A) Pancreas
B) Liver
C) Gall bladder
D) Duodenum

Q.44 Pick up the poikilothermic group:
A) Prototheria
B) Amphibia
C) Metatheria
D) Eutheria

Q.45 Gram negative cell wall have _______ % less peptidoglycan:
A) 10
B) 50
C) 40
D) 30

Q.46 Overproduction brings about:
A) Struggle for survival
B) Variation
C) Natural selection
D) Survival of the fittest

Q.47 Mastication is carried out by means of:
A) Canines and incisors
B) Canines and premolars
C) Premolars and incisors
D) Premolars and molars

Q.48 The word phage means:
A) Virus
B) Eater
C) Genome
D) Core

Q.49 Following enzymes work efficiently at extreme pH:
A) Pepsin and lipase
B) Lipase and sucrase
C) Pepsin and arginase
D) Arginase and catalase

Q.50 In his dihybrid cross Mendel got:
A) Four phenotypes
B) Eight phenotypes
C) Twelve phenotypes
D) Sixteen phenotypes

Q.51 Though their causes are different but _______ and ______ are analogous:
A) Cretinism, acromegaly
B) Gigantism, cretinism
C) Dwarfism, gigantism
D) Dwarfism, cretinism

Q.52 Baltimore used:
A) English numerals
B) French numerals
C) Roman numerals
D) Arabic numerals

Q.53 The role of teeth in birds is performed by:
A) Stomach
B) Gizzard
C) Beak
D) Duodenum

Q.54 There is no crossing over between the members of:
A) Two different genes
B) Two distant genes
C) Multiple alleles
D) Alternate alleles

Q.55 Marsupials represent the:
A) Primitive mammals
B) Advanced mammals
C) Intermediate mammals
D) Ancestors of mammals

Q.56 Canines are located in between:
A) Premolars and molars
B) Premolars and incisor
C) Molars and incisors
D) Molars and wisdom teeth

Q.57 In master – slave relationship:
A) Host DNA becomes master of the phage DNA
B) Phage DNA becomes master of the phage cells
C) Host DNA becomes master of the host cell
D) Phage DNA becomes master of the host cell

Q.58 On the basis of presence or absence and type of pigments plastids are categorized into:
A) Two categories
B) Three categories
C) Four categories
D) Five categories

Q.59 Law of segregation deals with the separation of:
A) Homologues of a pair
B) Homologous pairs
C) Parental gametes
D) Parental genomes

Q.60 Glycogenesis is antagonized by:
A) Glycolysis
B) Glucogenesis
C) Gluconeogenesis
D) Glycosylation

Q.61 It increases the number of the cells of thyroid and their secretory activity:
A) PTH
B) STH
C) TSH
D) Thyroxine

Q.62 In nerve cells the _______ is known as ________:
A) Ribosome, Nissl's body
B) Nissl's body, Ribosome
C) Ergastoplasm, Nissl's body
D) Nissl's body, Ergastoplasm

Q.63 Venae cavae pour the blood into:
A) Left ventricle
B) Right ventricle
C) Left atrium
D) Right atrium

Q.64 Viruses may use following substances as genetic material:
A) DNA
B) RNA
C) Proteins
D) Nucleic acids

Q.65 Visual cortex of brain receives input information from:
A) Iris
B) Cornea
C) Eyelids
D) Retina

Q.66 In Kreb's cycle decarboxylation occurs:
A) Once
B) Twice
C) Thrice
D) Quadrice

Q.67 ________ act as enzyme inhibitors for bacterial enzymes:
A) Immunogens
B) Antigens
C) Antibodies
D) Antibiotics

Q.68 The inhibitor that changes the shape of the active site is called:
A) Irreversible inhibitor
B) Reversible inhibitor
C) Competitive inhibitor
D) Non-competitive inhibitor

CHEMISTRY

Q.69 The type of structure isomerism which arises due to the difference in the nature of carbon chain or carbon skeleton is:
A) Cis-Trans isomerism
B) Position isomerism
C) Chain isomerism
D) Optical isomerism

Q.70 Catalytic oxidation of alkanes results in the formation of _______:
A) Carboxylic acid
B) Aldehyde
C) Ketone
D) Alcohol

Q.71 Among the following, which one has electron withdrawing effect:
A) $-NH_2$
B) $-N(CH_3)_2$
C) $-CHO$
D) $-I$

Q.72 Which of the following acts as a nucleophile in the reaction of alkyl halide with alcoholic / aqueous ammonia?
A) H^+
B) NH_3
C) NO_2^+
D) Br^+

Q.73 Which one of the following compounds act as catalyst when alcohols react with carboxylic acids?

A) Pt
B) Conc. HNO_3
C) Ni
D) Conc. H_2SO_4

Q.74 Both aldehyde and ketones give ________:

A) Tollen's test
B) 2,4-DNPH test
C) Benedict's solution test
D) Sodium nitroprusside test

Q.75 Final product of hydrolysis of nitrile yield ________:

A) Ketone
B) Aldehyde
C) Alcohol
D) Carboxylic acid

Q.76 The molecular mass determination in non-polar solvent like benzene shows that carboxylic acids exist as cyclic dimers. In this condition it shows

A) 6 membered ring
B) 8 membered ring
C) 4 membered ring
D) 10 membered ring

Q.77 What is the number of molecules in 600 cm^3 of oxygen under room conditions? ($N_A = 6.0 \times 10^{23}$ Molecules)

A) 1.25×10^{22}
B) 1.50×10^{23}
C) 1.5×10^{22}
D) 3.0×10^{24}

Q.78 Which one of the following represents the configuration of the three electrons of highest energy for the ground state of an element in Group IIIA?

A) $1s^2\ 2s^1\ 2p^1$
B) $2s^1\ 2p^2$
C) $3p^3$
D) $4s^2\ 4p^1$

Q.79 Why does copper wire conduct electricity when a potential difference is applied?

A) Bonding electrons in the crystal lattice move
B) Copper(II) ions move to the cathode
C) The atoms of copper become ionized
D) The crystal lattice breaks down

Q.80 Which gas is likely to deviate most from ideal gas behaviour?

A) HCl
B) CH_4
C) He
D) N_2

Q.81 Which class of reaction always has an endothermic enthalpy change?

A) Atomization
B) Formation
C) Combustion
D) Solution

Q.82 A student electrolyzes concentrated aqueous sodium chloride using carbon electrodes. She ensures that the solution is continually stirred. What happens as the electrolysis proceeds?

A) H_2 is produced at the anode
B) The NaCl gets more concentrated
C) NaClO is formed
D) HCl is formed

Q.83 For which equilibrium does K_c have no units?

A) $C_{(s)} + H_2O_{(g)} \rightleftharpoons CO_{(g)} + H_{2(g)}$
B) $CH_3OH_{(l)} + CH3CO2H_{(l)} \rightleftharpoons CH_3CO_2CH_{3(l)} + H_2O_{(l)}$
C) $Cu^{2+}_{(aq)} + 4NH_{3(aq)} \rightleftharpoons Cu(NH_3)_4{}^{2+}_{(aq)}$
D) $N_2O_{4(g)} \rightleftharpoons 2NO_{2(g)}$

Q.84 The rate equation for reaction is given by:

$$\textbf{Rate} = k[A][B]$$

If concentration units are mol dm^{-3}, what are the possible units of the specific rate constant (k)?

A) mol dm^{-3} s^{-1}
B) mol^{-1} dm^3 s^{-1}
C) mol^{-2} dm^3 s^{-1}
D) mol^{-1} s^{-1}

Q.85 Element "Z" is in period 3 of the periodic table. The following four statements describe the properties of element "Z" or its compounds.
Three statements are correct descriptions. One of the statements is not correct because it does not fit with the other three. Which statement is not correct?

A) Element "Z" is a solid at room temperature which conducts electricity
B) Element "Z" forms a chloride (ZCl_3) which reacts with more chlorine to give (ZCl_5)
C) The chloride (ZCl_3) reacts with water to give as acidic solution
D) Adding NaOH(aq) to the solution resulting from the reaction of ZCl_3 with water produces a white precipitate which is soluble in an excess of NaOH(aq)

Q.86 Due to their similar ionic radii, the reactions of lithium and magnesium and their corresponding compounds are very similar.
Which statement concerning the reactions of lithium and its compounds is correct?
A) Li_2CO_3 decomposes on heating at a relatively low temperature, forming Li_2O and CO_2
B) $LiNO_3$ decomposes on heating forming $LiNO_2$ and O_2
C) Li only burns slowly in O_2
D) Li reacts violently with cold water, liberating H_2

Q.87 Identify the incorrect statement about elements:
A) They have different atomic numbers
B) The term nucleon number is used for their masses
C) Term fractional atomic mass (relative atomic mass) is used for their masses
D) Fractional atomic mass of an element is the average mass of their isotopes proportional to their relative abundance

Q.88 Under vacuum, boiling point of glycerin decreases to ______ at 50 torr:
A) 100°C
B) 210°C
C) 120°C
D) 360°C

Q.89 The property of being able to add enthalpies is based on the:
A) Law of conservation of Heat
B) First law of thermodynamics
C) Second law of thermodynamics
D) Einstein equation, $E = mc^2$

Q.90 Which of the following molecules has largest number of shared pair of electrons?
A) C_2H_4
B) N_2
C) CO_2
D) NH_3

Q.91 Which one of the following ions exhibits colour in aqueous solution?
A) Sc^{3+}
B) Ni^{2+}
C) Ti^{4+}
D) Zn^{2+}

Q.92 Carbon atoms in ethene are ___________ hybridized:
A) sp^3
B) sp^2
C) sp
D) sp^3d

Q.93 Which of the following compounds will give a secondary alcohol after reaction with $NaBH_4/H_3O^+$?
A) CH_3COOCH_3
B) CH_3COCH_3
C) CH_3CH_2COOH
D) CH_3CH_2CHO

Q.94 Which of the following proteins acts as carrier of copper in blood plasma?
A) Haemoglobin
B) Glycoprotein
C) Ceruloplasmin
D) Histone

Q.95 The binding energy of translation metals increases up to group:
A) II B
B) IV B
C) III B
D) VI B

Q.96 Which one of the following elements has the largest second ionization energy?
A) K
B) Ca
C) Cl
D) Bi

Q.97 Each period in the periodic table starts with a subshell of a new shell and ends with:
A) Small shell
B) Different subshell of same shell
C) The next higher shell
D) p-subshell of same shell

Q.98 Which one of the following is not heterocyclic compound?
A) Aniline
B) Pyrrole
C) Pyridine
D) Thiophene

Q.99 All of the following tests help us to distinguish between alkanes and alkenes EXCEPT:
A) Baeyer's test
B) Br_2/CCl_4
C) Cl_2/CCl_4
D) Tollen's reagent

Q.100 Which one is a stronger Lewis base?
A) Phenol
B) Pyridine
C) Aniline
D) Both A and B have equal strength

Q.101 In the homologous series of alkane molecules as the number of carbon atoms increases, which of the following properties decreases numerically?
A) Enthalpy change of vaporization
B) Density
C) Vapor pressure
D) Number of isomers

Q.102 Equilibrium position is shifted backward by increasing temperature in all of the following EXCEPT:
A) $N_2 + 3H_2 \rightleftharpoons 2NH_3$
B) $2SO_2 + O_2 \rightleftharpoons 2SO_3$
C) $N_2 + O_2 \rightleftharpoons 2NO$
D) $CO_2 + H_2 \rightleftharpoons CO + H_2O$

Q.103 What product is formed when acetic acid reacts with P_2O_5?
A) Acetyl chloride
B) Acetic anhydride
C) Trichloroacetic acid
D) Dichloroacetic acid

Q.104 "It is impossible to determine simultaneously the position and velocity with accuracy of a small particle like electron". This statement is according to:
A) Heisenberg's uncertainty principle
B) Planck's law
C) de Broglie principle
D) Aufbau's principle

Q.105 Identify the compound, which give iodoform test:
A) Methanol
B) Methyl ketone
C) 3-Hexanol
D) Propionaldehyde

Q.106 Which one of the following does not affect the rate of reaction?
A) Concentration of reactants
B) Surface area of products
C) Temperature
D) Light

Q.107 The element that is the best reducing agent is:
A) Ca
B) Au
C) H
D) Fe

Q.108 Which one of the following shows metamerism?
A) $CH_3CH_2CH = CH_2$ and $H_3CCH = CHCH_3$
B) $CH_3CH_2OCH_2CH_3$ and $CH_3OCH_2CH_2CH_3$
C) $CH_3CH_2CH_2CHO$ and $CH_3COCH_2CH_3$
D) $CH_3CH_2CH_2CH_2CH_3$ and $CH_3CH(CH_3)CH_2CH_3$

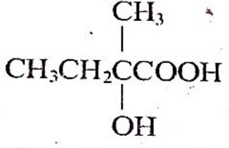
Q.109 In the reaction sequence:

$$CH_3CH_2CH_2Br + (\text{Alcohlic})\ KOH \longrightarrow C \xrightarrow[H_2O,100°C]{\text{conc } H_2SO_4} D$$

Product D will be
A) 2-propanol
B) 1-propanol
C) Propanoic acid
D) Mixture of methanol and ethanol

Q.110 The potential difference of an electrochemical cell is measured by:
A) Ammeter
B) Voltmeter
C) Galvanometer
D) Calorimeter

Q.111 Consider the following structure of carboxylic acid:



$$CH_3CH_2\overset{\displaystyle CH_3}{\underset{\displaystyle OH}{C}}COOH$$

The correct IUPAC name of the given structure is:
A) 2-Hydroxy-2-methylbutanoic acid
B) 3-Hydroxy-3-methylbutanoic acid
C) 2-Hydroxy-3-methylbutanoic acid
D) 3-Hydroxy-2-methylbutanoic acid

Q.112 Which of the following is an example of molecular solid?
A) ZnS
B) MgO
C) Ice
D) Diamond

Q.113 The product obtained at the anode during the electrolysis of an aq. H_2SO_4 is:
A) Hydrogen
B) Oxygen
C) Sulphur dioxide
D) No product is formed

Q.114 Bond formation between atoms:
A) Increases the energy and decreases stability
B) Decreases the energy and increases stability
C) Increases the energy and increase stability
D) No change in energy

Q.115 The shape of $[Co(NH_3)_6]^{3+}$ complex is:
A) Linear
B) Square planer
C) Tetrahedral
D) Octahedral

Q.116 All of the following statements are correct EXCEPT?
A) Addition of HX to unsymmetrical alkenes takes place according to Markownikov's rule
B) Benzene is a polymer of ethene
C) Mustard gas is a blistering agent
D) Methane is also called marsh gas

Q.117 In the given reaction the intermediate product (X) is:

$$\textbf{Primary Alcohol} + [O] \xrightarrow[H_2SO_4]{K_2Cr_2O_7} X \xrightarrow{[O]} Y$$

A) Ketone
B) Carboxylic acid
C) Aldehyde
D) Ether

Q.118 For endothermic reaction, the minimum value for the energy of activation will be:
A) Less than ΔH
B) More than ΔH
C) Zero
D) Equal to ΔH

Q.119 Most of the transition elements act as good catalyst due to:
A) The presence of vacant d-orbitals
B) The tendency of show variable oxidation states
C) The presence of defects in their crystal lattice
D) All of these

Q.120 Biological molecules (proteins) which catalyze a biochemical reaction and remain unchanged after completion of reactions are called:
A) Cofactor
B) Activator
C) Coenzymes
D) Enzymes

Q.121 Sodium phenoxide on treating with hydrochloric acids yields:
A) Benzene
B) Benzoic acid
C) Phenol
D) Benzaldehyde

Q.122 Ethanoic acid has a pK_a of 4.7. Which one will have higher pK_a value than ethanoic acid?
A) $ClCH_2CO_2H$
B) C_6H_5OH
C) FCH_2COOH
D) Br CH_2COOH

PHYSICS

Q.123 According to Bohr's Model of Hydrogen atom:
A) The linear velocity of electrons is quantized
B) The total linear momentum of electrons is quantized
C) The angular momentum of electrons is quantized
D) The angular velocity of electrons is quantized

Q.124 The ionization energy of hydrogen atom is 13.6 eV. The energy required to remove an electron from 3rd orbit is:
A) 13.6 eV
B) 3.4 eV
C) 9.5 eV
D) 1.5 eV

Q.125 Which of the following statements is true about half-life?
A) The half-life of a substance is the same for all elements
B) The half-life of a substance is dependent on its atomic number
C) The half-life of a substance can be altered by changing its chemical properties
D) The half-life of a substance is a constant value

Q.126 One becquerel is equal to:
A) 3.7 disintegrations per second
B) 3.7×10^{10} disintegrations per second
C) One disintegration per second
D) Ten disintegrations per second

Q.127 Transverse waves usually cannot be propagated in:
A) Liquids
B) Solids
C) Gases
D) Both A and C

Q.128 In an open air column, the first harmonic has how many nodes and antinodes?
A) 1 node, 1 antinode
B) 2 nodes, 2 antinodes
C) 1 node, 2 antinodes
D) 2 nodes, 1 antinode

Q.129 1st law of thermodynamics for 1 mole of ideal gas undergoing isobaric process can be written as:
A) $C_v\Delta T = \Delta U$
B) $C_v\Delta T = C_p\Delta T + P\Delta V$
C) $C_p\Delta T = C_v\Delta T + P\Delta V$
D) $C_p\Delta T = P\Delta V$

Q.130 Which one is not an example of adiabatic process?

A) Rapid escape of air from a burst tire
B) Rapid expansion of air
C) Conversion of water into ice in refrigerator
D) Cloud formation in the atmosphere

Q.131 The branch of physics which deals with the investigation of wavelength and intensities of electromagnetic radiation emitted or absorbed by atoms is called:

A) Magnetic Imaging
B) Spectroscopy
C) Superconductivity
D) Topography

Q.132 The relation for Pfund series is given as:

A) $\frac{1}{\lambda} = R_H\left(\frac{1}{1^2} - \frac{1}{n^2}\right)$
B) $\frac{1}{\lambda} = R_H\left(\frac{1}{4^2} - \frac{1}{n^2}\right)$
C) $\frac{1}{\lambda} = R_H\left(\frac{1}{3^2} - \frac{1}{n^2}\right)$
D) $\frac{1}{\lambda} = R_H\left(\frac{1}{5^2} - \frac{1}{n^2}\right)$

Q.133 What is radioactivity?

A) The ability of an unstable nucleus to emit light
B) The ability of an unstable nucleus to emit radiation.
C) The ability of an unstable nucleus to conduct electricity
D) The ability of an unstable nucleus to produce sound

Q.134 Which of the following is a fusion reaction?

A) ${}_0n^1 + {}_7N^{14} \longrightarrow {}_6C^{14} + {}_1H^1$
B) ${}_1H^3 \longrightarrow {}_2He^3 + {}_{-1}e^0$
C) ${}_1H^2 + {}_1H^2 \longrightarrow {}_2He^4 + \text{Heat}$
D) None of these

Q.135 What is the difference between transverse and longitudinal waves?

A) Transverse waves have particles moving perpendicular to the direction of wave propagation, while longitudinal waves have particles moving parallel to the direction of wave propagation
B) Transverse waves have particles moving parallel to the direction of wave propagation, while longitudinal waves have particles moving perpendicular to the direction of wave propagation
C) Transverse waves and longitudinal waves have the same particle motion
D) None of the above

Q.136 A particle is in simple harmonic motion with period 4 s. At time t = 0 it is at the equilibrium point. Of the following times, at which time is it farthest from the equilibrium point?

A) 2.0 s
B) 4.0 s
C) 2.8 s
D) 6.0 s

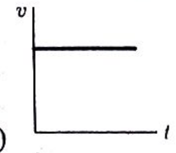
Q.137 In an isothermal process, the volume of an ideal gas is doubled. One can say that:

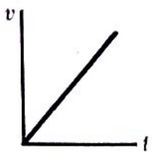
A) Internal energy of the system decreases
B) Work done by the gas is positive
C) Work done by the gas is negative
D) Internal energy of the system increases

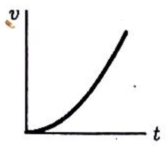
Q.138 The conversion of water into steam at 100 °C is:

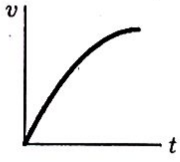
A) An isochoric process
B) An adiabatic process
C) Isothermal process
D) Isobaric process

Q.139 An object is dropped from rest. Which of the following four graphs correctly represents its motion?

A)


B)


C)


D)


Q.140 A particle revolves uniformly round a circular path. The acceleration of the particle is:
A) Along the circumference of the circle
B) Along the tangent
C) Along the radius
D) Zero

Q.141 The resistivity of a metal rod does not depend on:
A) Its temperature
B) Its material
C) Its length and area of cross-section
D) All of these

Q.142 A proton (charge e), traveling perpendicular to a magnetic field, experiences the same force as an alpha particle (charge 2e) which is also traveling perpendicular to the same field. The ratio of their speeds, $\frac{v_{proton}}{v_{alpha}}$, is:
A) 1
B) 2
C) 4
D) 8

Q.143 When yellow light is incident on a surface, no electrons are emitted while green light can emit. If red light is incident on the surface, then:
A) No electrons are emitted
B) Photons are emitted
C) Electrons of higher energy are emitted
D) Electrons of lower energy are emitted

Q.144 A body of mass m having an initial velocity v, makes head on collision with a stationary body of mass M. After the collision, the body of mass m comes to rest and only the body having mass M moves. This will happen only when:
A) $m >> M$
B) $m = M$
C) $m << M$
D) $m = \frac{1}{2}M$

Q.145 What is the angular velocity of earth?
A) $\frac{2\pi}{86400} rad\ s^{-1}$
B) $\frac{2\pi}{24} rad\ s^{-1}$
C) $\frac{2\pi}{3600} rad\ s^{-1}$
D) $\frac{2\pi}{6400} rad\ s^{-1}$

Q.146 A battery has an emf of 9 V and an internal resistance of 2 Ω. If the potential difference across its terminals is greater than 9 V:
A) It must be connected across a large external resistance
B) It must be connected across a small external resistance
C) The current must be out of the positive terminal
D) The battery is being charged

Q.147 If no external voltage is applied across PN-junction, there would be:
A) No electric field across the junction
B) An electric field pointing from N-type to P-type side across the junction
C) An electric field pointing from P-type to N-type side across the junction
D) A temporary electric field during formation of PN-junction that would subsequently disappear

Q.148 Compton's shift in wavelength ($\Delta\lambda$) is zero, when scattering angle of photon is:
A) 90°
B) 0°
C) 180°
D) 45°

Q.149 A billiard ball moving with a speed of 5 m s^{-1} collides with an identical ball originally at rest. If the first ball stops after collision, then the second ball will move forward with a speed of:
A) 10 m s^{-1}
B) 2.5 m s^{-1}
C) 5 m s^{-1}
D) 1.0 m s^{-1}

Q.150 A 100 kg car is moving with a maximum velocity of 9 m s^{-1} across a circular track of radius 30 m. The maximum force of friction between the road and the car is:
A) 1000 N
B) 270 N
C) 706 N
D) 200 N

Q.151 An ordinary light bulb is marked 120 W, 120 V. Its resistance is:
A) 60 Ω
B) 120 Ω
C) 180 Ω
D) 240 Ω

Q.152 A loss free transformer has 500 turns on its primary winding and 2500 in secondary. The meters of the secondary indicate 200 V at 8 A under these conditions. The voltage and current in the primary is:

A) 100 V, 16 A
B) 160 V, 10 A
C) 40 V, 40 A
D) 80 V, 20 A

Q.153 Which of the following has greatest energy content?

A) 20 photons of red-light
B) 20 photons of green light
C) 20 photons of orange light
D) 20 photons of yellow light

Q.154 Two springs have their force constant as k_1 and k_2($k_1 > k_2$). When they are stretched by the same force:

A) No work is done in case of both the springs
B) Equal work is done in case of both the springs
C) More work is done in case of second spring
D) More work is done in case of first spring

Q.155 An isolated charged point particle produces an electric field with magnitude E at a point 2 m away. At a point 1 m from the particle the magnitude of the field is:

A) 2E
B) 4E
C) E/2
D) E/4

Q.156 An electron and a proton with equal momentum enter perpendicularly into a uniform magnetic field, then:

A) The path of proton shall be more curved than that of electron
B) The path of proton shall be less curved than that of electron
C) Both are equally curved
D) Path of both will be straight line

Q.157 Conversion of alternating current into direct current is called:

A) Amplification
B) Rectification
C) Modulation
D) None of these

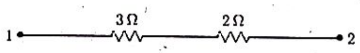
Q.158 Two bodies of masses m_1 and m_2 have equal kinetic energies. If p_1 and p_2 are their respective momentum, then ratio p_1:p_2 is equal to:

A) $m_1 : m_2$
B) $\sqrt{m_1} : \sqrt{m_2}$
C) $m_2 : m_1$
D) $m_1^2 : m_2^2$

Q.159 Electric field lines:

A) Are vectors in the direction opposite to the electric field
B) Form closed loops
C) Cross each other in the region between two-point charges
D) Originate from the positive charge and terminate on the negative charge

Q.160 In the diagram, the current in the 2 Ω resistor is 2 A. The potential difference between points 1 and 2 is:



A) 4 V
B) 1.25 V
C) 12 V
D) 10 V

Q.161 If the line frequency is 50 Hz, the output ripple frequency of bridge rectifier is:

A) 50 Hz
B) 100 Hz
C) 150 Hz
D) 200 Hz

Q.162 A body under the action of several forces will have zero acceleration:

A) When the body is very light
B) When the body is very heavy
C) When the body is a point body
D) When the vector sum of all the forces acting on it is zero

Q.163 If momentum is increased by 20%, then K.E increases by:

A) 44%
B) 66%
C) 55%
D) 77%

Q.164 Each plate of a capacitor stores a charge of magnitude 1 mC when a 100 V potential difference is applied. The capacitance is:

A) 5 μF
B) 10 μF
C) 50 μF
D) 100 μF

Q.165 An electron moves in the negative x direction, through a uniform magnetic field in the negative y direction. The magnetic force on the electron is:

A) In the positive y direction
B) In the negative y direction
C) In the positive z direction
D) In the negative z direction

Q.166 1 weber is the same as:

A) 1 V s
B) 1 T s
C) 1 T/m
D) 1 V/s

Q.167 The acceleration of a moving body can be found from:

A) Area under velocity-time graph
B) Area under distance-time graph
C) Slope of velocity-time graph
D) Slope of distance-time graph

Q.168 The power of pump, which can pump 200 kg of water to a height of 50 m in 10 sec will be:

A) 10×10^3 W
B) 4×10^3 W
C) 20×10^3 W
D) 60×10^3 W

Q.169 If 1000 J of work is required to carry a charged particle between two points with a potential difference of 40 V, the magnitude of the charge on the particle is:

A) 40 C
B) 25 C
C) 20 C
D) 50 C

Q.170 In Lorentz force, the magnetic force is:

A) Resistive force
B) Work doing force
C) Deflecting force
D) Inertial force

Q.171 A uniform magnetic field makes an angle of 30° with the z axis. If the magnetic flux through a 1 m^2 portion of the xy plane is 5 Wb, then the magnetic flux through a 2 m^2 portion of the same plane is:

A) 4.3 Wb
B) 5 Wb
C) 5.8 Wb
D) 10 Wb

Q.172 What is the relation between displacement, time and acceleration in case of a body having uniform acceleration?

A) $S = v_i t + \frac{1}{2}at^2$
B) $S = (v_i + a)t$
C) $v_i^2 - 2at$
D) $S = (v_f^2 - v_i^2)t$

Q.173 A flywheel rotating at 12 rev s^{-1} is brought to rest in 6 s. The magnitude of the average angular acceleration in rad s^{-2} of the wheel during this process is:

A) $1/\pi$
B) 2
C) 4
D) 4π

Q.174 For an ohmic resistor, resistance is the proportionality constant for:

A) Potential difference and electric field
B) Current and length
C) Current and cross-sectional area
D) Current and potential difference

Q.175 In a coil of self-inductance 0.5 henry, the current varies at a constant rate from zero to 10 amperes in 2 seconds. The e.m.f. generated in the coil is:

A) 10 volts
B) 2.5 volts
C) 5 volts
D) 1.25 volts

Q.176 The charge and rest mass of photon used in Compton's effect is:

A) Zero, zero
B) +e, zero
C) –e, zero
D) –e, equal to mass of electron

ENGLISH

Directions: Read each sentence and determine the meaning of the word using cross-sentence clues or your prior knowledge.

Q.177 The patient complained of headache, nausea, and ______________.

A) Resilience
B) Loquaciousness
C) Lassitude
D) Piety

Direction: Choose the option of the best meaning for the underlined word as it is used in context.

Q.178 When your plan brings us great wealth, you will be rewarded for your sagacity.

A) Good looks
B) Mistakes
C) Intelligence
D) Huge appetite

Directions: Choose the most suitable answer that identifies the homophones in the sentence.

Q.179 These enzymes _______ down food in the stomach

A) Brake
B) Break
C) Brick
D) Bark

Q.180 Find out the correct meaning of idiomatic expression "To kill two birds with one stone"

A) To throw stones at two birds
B) To save two birds from danger
C) To incur more loss than benefit
D) To accomplish two goals at once

Direction: Choose the word that is most nearly SIMILAR in the meaning of the following word.

Q.181 FIGURATIVE

A) Metaphoric
B) Breezy
C) Wry
D) Whimsical

Directions: Choose the word that is most OPPOSITE in the meaning of the following word.

Q.182 UNWIELDY

A) Practicable
B) Exempted
C) Free
D) Privileged

Directions: Choose the correct spelling:

Q.183

A) Yern
B) Yearne
C) Yearnn
D) Yearn

Directions: Fill in the blank with appropriate option:

Q.184 Fifty dollars ________ a compact amount as a paper note, but when my fifty dollars ________ scattered on the ground in the shape of coins, they were quite difficult to collect.

A) seems .... were
B) seems .... was
C) seem .... was
D) seem .... were

Q.185 ________ threats of strike, the management remain ______ that an agreement can be reached.

A) despite ------ hopeful
B) by ------ hopeful for
C) under ------- hopeful about
D) for -------- hopeful at

Q.186 I have started getting up at 5 a.m. but I don't know if I can _________ for long.

A) keep it down
B) keep it up
C) look it after
D) catch it up

Directions: Identify the underlined word or phrase that contains a mistake and needs to be changed to make the sentence correct.

Q.187 This chemical is chiefly employed in destroying rats and other vermins, and driving hedgehogs from their burrows.
A (chiefly employed) B (rats) C (vermins,) D (driving)

Directions: Identify the part of sentence that contains a mistake and needs to be changed to make the sentence correct

Q.188 /(A)In recent decades, /(B) the efficiency of the IMF /(C) was questioned by a growing /(D) number of countries.

Directions: Pick the correct option.

Q.189

A) He said, go to Customer Service, not the checkout," didn't he?
B) He said, "Go to Customer Service, not the checkout," didn't he?
C) He said, "Go to Customer Service, not the checkout," didn't he
D) He said, "go to Customer Service, not the checkout, didn't he?

Q.190

A) While Shahbaz is working in office tomorrow, his sister will have been painting the living room.
B) While Shahbaz is working in office tomorrow, his sister will be painting the living room.
C) While Shahbaz is working in office tomorrow, his sister will had painted the living room.
D) While Shahbaz is working in office tomorrow, his sister will be painted the living room.

Q.191

A) If you take exercise daily and monitor your caloric intake, you will be able to maintain your health.
B) If one take exercise daily and monitor your caloric intake, you will be able to maintain your health
C) If you take exercise daily and monitor your caloric intake, most people will be able to maintain your health.
D) If you take exercise daily and monitor your caloric intake, you will be able to maintain yours health
Modifier

Q.192

A) I looked surreptitious at his facial scar which looked horribly.
B) I was looked surreptitiously at his facially scar which looked horrible.
C) I looked surreptitiously at his facial scar who looked in a horrible way.
D) I looked surreptitiously at his facial scar which looked horrible.

Q.193

A) Foreshadowing, a literary technique when an author hints at what will happen later in the text, is a useful tool for setting the right atmosphere.
B) Foreshadowing, a literary technique whereby an author hints at what will happen later in the text, is a useful tool for setting the right atmosphere.
C) Foreshadowing, a literary technique where an author hints at what will happen later in the text, is a useful tool for setting the right atmosphere.
D) Foreshadowing, a literary technique whence an author hints at what will happen later in the text, is a useful tool for setting the right atmosphere.

Directions: Read the following passage and answer the question.

When we were children, summer was our favorite season, and the best days of all were those spent at the beach. Mom would pack the cooler with tuna sandwiches, fruit, lemonade, and cookies. Dad would drive the old station wagon to Jones Beach, and we'd skip across the hot sand to find the perfect spot to spread our blankets. My brothers and I would immediately run into the ocean, trying to catch the waves and ride them to shore. At the end of the day, sandy, sun-burned, and exhausted, we'd climb into the car and fall asleep before we even hit the highway.

Q.194 Which of the following best describes the author's attitude toward her days at the beach?

A) Mild irritation
B) Affectionate nostalgia
C) Gleeful malice
D) Somber resignation

LOGICAL REASONING

Q.195 Statements: Some kings are queens. All the queens are beautiful.

Conclusions:

I. All the kings are beautiful
II. All the queens are kings.

A) Only I conclusion follows
B) Only II conclusion follows
C) Either I or II follows
D) Neither I nor II follows

Q.196 Statement: In the extreme heat last month, several passengers travelling in business class busses have fallen ill with cold-induced diseases like cough, fever, and pneumonia.

Courses of Action:

I. The air conditioning facility on all buses should be discontinued immediately.
II. The companies should implement a system to regulate the intensity of air conditioning in buses.

A) If only I follows
B) If only II follows
C) I either I or II follows
D) If neither I nor II follows

Q.197 Statement: 200 units of discount limit on electricity bills in Pakistan is just an eyewash. No family can fulfill their electricity needs in that stipulated limit.

Conclusions:

I. The government is not interested in helping the consumers out.
II. People are not serious in controlling their electricity use.

A) Only conclusion I is valid.
B) Only conclusion II is valid.
C) Either conclusion I or II is valid.
D) Neither conclusion I nor II is valid.

Q.198 **Statement:** Should United State ban Chinese products in its market?

Arguments:

I. Yes, local manufacturers will be benefited.

II. No, it will hamper bilateral relationships.

A) Only argument I is strong.
B) Only argument II is strong.
C) Either I or II is strong.
D) Neither I nor II is strong.

Q.199 **Fact 1:** All dogs like to run.

Fact 2: Some dogs like to swim.

Fact 3: Some dogs look like their masters.

If the first three statements are facts, which of the following statements must also be a fact?

I: All dogs who like to swim look like their masters.

II: Dogs who like to swim also like to run.

III: Dogs who like to run do not look like their masters.

A) I only
B) II only
C) II and III only
D) None of the statements is a known fact.

Q.200 **Look at this series: 7, 10, 8, 11, 9, 12, ... What number should come next?**

A) 7
B) 10
C) 12
D) 13